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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,964	12/19/2001	Kyujin Jung	4459-014A	1168

7590

10/03/2003

LOWE HAUPTMAN GILMAN & BERNER, LLP
Suite 310
1700 Diagonal Road
Alexandria, VA 22314

EXAMINER

NGUYEN, KHIEM D

ART UNIT	PAPER NUMBER
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2823

DATE MAILED: 10/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/020,964

Applicant(s)

JUNG ET AL.

Examiner

Khiem D Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-9 and 14-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-9 and 14-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Response to Amendment

Response to Arguments

Applicant's arguments with respect to claims 5-9 and 14-20 have been considered but are moot in view of the new ground(s) of rejection.

New Grounds of Rejection

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 5, 6, 9, 14, 15 and 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Coffman (U.S. Patent 6,451,627).

Coffman disclose a method of making a low-pin-count chip package, the method comprising the steps of (FIGS. 1-17 and related text):

providing a sheet carrier (FIG. 12, 126);

laminating a metal layer (FIG. 12, 124) on the sheet carrier;

half-etching the metal layer so as to form cavities (FIG. 14, 142) at the predetermined positions thereof (col. 5, line 56 to col. 6, line 13 and FIG. 14);

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forming a photoresist layer (FIG. 3, 32) on the half-etched metal layer (col. 2, line 59 to col. 3, line 20);

half-removing the photoresist layer such that only the photoresist within the cavities is left (col. 2, line 59 to col. 3, line 20 and FIG. 3);

forming a metal coating (FIG. 14, 31) on the surface of the half-etched metal layer which is not covered by the photoresist wherein the metal coating comprises a layer of nickel covering the surface of the metal layer which is not covered by the photoresist, and a layer of metal selected from the group consisted of gold and palladium covering the nickel layer (col. 3, lines 2-6);

stripping the photoresist within the cavities (FIG. 14);

etching the half-etched metal layer using the metal coating as a mask (col. 5, line 56 to col. 6, line 13 and FIG. 14) so as to form a plurality of connection pads (FIG. 14, 142) having a "substantially" concave profile (col. 5, line 66 to col. 6, line 4 and FIG. 14);

attaching a semiconductor chip (FIG. 15, 144) onto the die pad (FIG. 16, 138) on the sheet carrier (col. 6, lines 14-15);

electrically coupling the semiconductor chip to the connection pads (col. 6, lines 15-19);

forming a package body (FIG. 16, 148) over the semiconductor chip and the connection pads wherein the substantially concave profile helps to lock the connection pads in the package body (col. 6, lines 21-26);

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removing the sheet carrier after the package body is formed (col. 6, lines 28-38 and FIG. 17); and

forming a protective metal flash (FIG. 17, 152) on the lower surface of the connection pads exposed from the package body (col. 6, lines 28-38).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 8, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coffman (U.S. Patent 6,451,627) as applied to claims 5, 6, 9, 14, 15 and 18-20 above, and further in view of Bernier et al. (U.S. Patent 6,251,707) and Bunyan (U.S. Pub. 2002/0012762).

Coffman fails to teach wherein the sheet carrier is a polyimide tape with a layer of silicone adhesive as recited in present claims 7 and 16.

Bernier disclose wherein the sheet carrier is a polyimide tape with a layer of silicone adhesive (col. 2, lines 30-41). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Coffman and Bernier to enable the sheet carrier of Coffman to be formed and furthermore to increase the heat conduction from the chip and thus minimize chip temperature (col. 2, lines 40-41).

Neither Coffman nor Bernier discloses wherein the sheet carrier is a polyester tape with a layer of silicone adhesive as recited in present claims 8 and 17.

Bunyan discloses wherein the sheet carrier is a polyester tape with a layer of silicone adhesive (page 3, paragraph [0034]). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Coffman and Bunyan to enable the sheet carrier of Coffman to be formed.

Response to Amendment

Response to Arguments

Applicant's arguments with respect to claims 5-9 and 14-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

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advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (703) 306-0210. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9179 for regular communications and (703) 746-9179 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.N.
September 11, 2003


Olik Chaudhuri
Supervisory Patent Examiner
Technology Center 2800